Notes on Huntley Meadows Park

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Introduction

Huntley Meadows Park comprises approximately 1,425 acres (577 ha) of freshwater wetland and surrounding forest in southern Fairfax County, Virginia. Managed by the Fairfax County Park Authority (FCPA), it is the County's largest park, and features the largest (70+ acres, 28+ ha) non-tidal marsh in the area. Bounded by housing subdivisions to the north, east, and south, and government installations to the west and southwest, the Park is an island of blue and green prized by casual strollers and scientific specialists alike. It is particularly valued by naturalists for the unique diversity of the habitat to be found there, especially considering its urban/suburban surroundings. Guidebook writers and editors like Scott Weidensaul [Weidensaul92] and David W. Johnston [Johnston97] have singled out the Park for special attention, noting that its mix of woods and water makes it a popular spot for Big Day birders; Weidensaul calls the Park's very existence "utterly improbable," encroached on as it is by the busy traffic corridors of U.S. 1 and Interstates 95 and 495. The main entrance to Huntley Meadows Park is only three miles from the Huntington terminus of Metro's Yellow Line, and hence the Park is a short trip from anywhere in the Washington, D.C. metropolitan area.

General Environment and Setting

The Park is situated in the Atlantic Coastal Plain province at approximately 38° 45′ N latitude and 77° 06′ W longitude at about 10 m in elevation. Lying in an area called Hybla Valley, the land is table flat, generally with slopes of 2 percent or less. Mean annual precipitation ranges from 37 to 49 inches (94 to 124 cm); mean annual air temperature is in the range 45° to 57° F (7° to 14° C). The growing season is 185 to 212 days [NRCS09]. [USDA90] maps the area into the northern edge of Plant Hardiness Zone 7a, near Zone 6b.

A part of the Eastern Deciduous Forest, the Park is best described as a member of the Oak-Hickory Forest community [Kricher88], albeit a rather wet and poorly drained example.

Three streams drain the Park, all flowing generally southward from steeper ground to the north. On the western margin of the property is Dogue Creek; Barnyard Run flows south through the center of the Park before turning west to join Dogue Creek; and Little Hunting Creek runs near the eastern edge. Ponding of Barnyard Run accounts for the central wetland area. Little Hunting Creek flows into the Potomac River; its mouth is just east of the parkland surrounding George Washington's Mount Vernon estate. Farther downriver and to the southwest, Dogue Creek likewise empties into the Potomac, skirting the U.S. Army's Fort Belvoir. Thus the two streams form a shallow neck of land extending into the big river. Farther downriver on the Potomac are the preserves and parks of Mason Neck.

Automobile and pedestrian access is by two means: First, at Lockheed Boulevard and Harrison Lane a short access road leads to a parking area and visitor center. From that point, a stonedust trail leads generally southwest to a boardwalk that traverses the wetland. Before reaching the boardwalk, a fork in the trail to the left continues through the woods, rejoining the boardwalk at an observation tower. Second, a very small parking area (ca. 10 cars) along South Kings Highway gives access to the Hike-Bike Trail, an asphalt and stonedust trail that leads about 1 mile directly south, traversing meadow habitat, to terminate with an observation deck at the marsh. Side trails (natural surface) from the Hike-Bike Trail lead to a small pond and another small wetland.

Just a few miles to the northwest lies the Fall Line,

> a zone of geologic transition that marks the boundary between the older, resistant, metamorphic rocks of the Piedmont and younger, softer, mostly unconsolidated sediments of the Coastal Plain.... Virginia's Coastal Plain is a low-relief, terraced landscape that slopes gently toward the Atlantic Ocean from its highest elevations at the Fall line (~ 75 m / 250 ft). Geologically speaking, this province is a young landscape sculpted during the last few million years by the repeated rising and falling of sea level during several cycles of Pleistocene glaciation. The Coastal Plain is underlain by a wedge of sediments that increases in thickness from the Fall Line to the continental shelf. Soils tend to be sandy, although deposits of terrace gravels, marine clays, and fossiliferous shells are common locally. [Fleming06]

Pickett [Pickett09] describes the underlying rock of the area as "Coastal Plain sediments of the Potomac Group, formed during the early Cretaceous (139-95 mya)," but Scalley [Scalley09] cites the Miocene Epoch (23.8-5.3 mya).

Per [NRCS09], by area, one half of the soil in the Park is Gunston silt loam (0 to 2 percent slopes). Most of the remainder is made up of Mattapex loam; Elkton silt loam, occasionally ponded; and Hatboro silt loam, frequently flooded (all at 0 to 2 percent slopes).

Gunston silt loam, found here in the relatively drier woods, is described with the following attributes. (Interpretation of land capability class follows [NRCS07].)

- Parent material: Fluviomarine deposits
- Depth to restrictive feature: More than 80 inches
- Somewhat poorly drained
- Depth to water table: About 8 to 30 inches
- Land capability (nonirrigated): 3w
    - capable of producing common cultivated crops and pasture plants without deteriorating over a long period of time, but with severe limitations that reduce the choice of plants or require special conservation practices, or both; excess water (poor soil drainage, wetness, a high water table, and/or overflow) is the dominant limitation affecting use
- Typical profile:
    - 0 to 8 inches: Silt loam
    - 8 to 75 inches: Clay

The Hatboro silt loam comprises the wetland area, and is described with these attributes:

- Parent material: Alluvium derived from metamorphic and igneous rock
- Depth to restrictive feature: More than 80 inches
- Poorly drained
- Depth to water table: About 0 to 18 inches
- Land capability (nonirrigated): 5w
    - little or no hazard of erosion but having other limitations that limit use mainly to pasture, range, forestland, or wildlife food and cover; excess water (poor soil drainage, wetness, a high water table, and/or overflow) is the dominant limitation affecting use
- Typical profile:
    - 0 to 6 inches: Silt loam
    - 6 to 23 inches: Loam
    - 23 to 60 inches: Clay loam

Plants

Plant life in the wetland area (Figure 1) is dominated by Cattail (*Typha* sp.). Pickett [Pickett09], describing a 1998 field trip, records various rushes and Lizard's Tail *(Saururus cernuus*). Duckweed (family Lemnaoideae) can easily be found floating in the water. Later in the season the bright orange parasitic vine Dodder (*Cuscuta* sp.) drapes itself across the aquatic shrubs. Drier spots feature willows (*Salix* sp.).

Figure 1

A portion of dry land is managed by park staff as meadow, with vegetation controlled by mowing and controlled burns.

The remainder of the landscape is hardwood forest, host to a generous array of species. Pickett notes the predominance of Sweetgum (*Liquidambar styraciflua*) among the canopy trees. Also to be found are Red Maple (*Acer rubrum*), Willow Oak and other *Quercus* species, Virginia Pine (*Pinus virginiana*), and birch (*Betula* sp.). Tuliptree (*Liriodendron tulipifera*) can be found at forest edge near the mowed meadows. Gary Evans [pers. comm.] also notes a stand of Bigtooth Aspen (*Populus grandidentata*) that can be found to the east of the southern segment of the Hike-Bike Trail [pers. obs.].

In the understory, Redbud (*Cercis canadensis*) is the early spring bloomer; Beech (*Fagus grandifolia*) and American Holly (*Ilex opaca*) are also abundant. Redcedar (*Juniperus* sp.) can be found thriving in the relatively drier areas. Pickett adds dogwood (*Cornus* sp.), Black Cherry (*Prunus serotina*), Sassafras (*Sassafras albidum*), Sourgum (*Nyssa sylvatica*), Ironwood (*Carpinus caroliniana*), species of *Ulmus*, and White Ash (*Fraxinus americana*). Pickett's list of

shrubs includes viburnums, Highbush Blueberry and Deerberry (*Vaccinium* spp.), and Spicebush (*Lindera* sp.).

Visitors to the Park in March spot the harbinger blooms of Spring Beauty (*Claytonia virginica*) on the forest floor, along with Spotted Wintergreen (*Chimaphila maculata*). Pickett observed buttercup (*Ranunculus* sp.), bedstraws (*Galium* spp.), Star Chickweed (*Stellaria pubera*), and Common Yellow Woodsorrel (*Oxalis stricta*). A checklist of wildflowers prepared by Friends of Huntley Meadows Park [FOHMP09] comprises more than 300 species (native and introduced), including 12 goldenrods.

Among the vines, Greenbrier (*Smilax* sp.) and Poison Ivy (*Toxicodendron radicans*) are evident. Pickett recorded a plentiful number of ferns, including Spinulose Wood Fern (*Dryopteris carthusiana*), Sensitive Fern (*Onoclea sensibilis*), Royal Fern (*Osmunda regalis*), Christmas Fern (*Polystichum acrostichoides*), and Cinnamon Fern (*Osmundastrum cinnamomeum*).

Animals

[FOHMP09] supplies checklists for certain of the more charismatic taxa: 210 species of birds, 17 species of amphibians (including 6 salamanders), 21 species of reptiles (6 turtles, 3 lizards, and 13 snakes), 25 confirmed species of mammals (along with 9 unconfirmed species of bats and rodents); and 17 genera of dragonflies and damselflies (order Odonata).

Of the 25 confirmed species of mammals on the checklist, we can (perhaps arbitrarily) assign them to the following trophic categories:

- Herbivores (Primary Consumers)
  - Folivores
    - Woodchuck (*Marmota monax*)
    - Meadow Vole (*Microtus pennsylvanicus*)
    - Beaver (*Castor canadensis*)
    - Muskrat (*Ondatra zibethicus*)
    - Eastern Cottontail (*Sylvilagus floridanus*)
    - White-tailed Deer (*Odocoileus virginianus*)
  - Granivores
    - Gray Squirrel (*Sciurus carolinensis*)
    - Southern Flying Squirrel (*Glaucomys volans*)
- Primary Predators (Secondary Consumers)
  - Insectivores
    - Southeastern Shrew (*Sorex longirostris*)
    - Eastern Mole (*Scalopis aquaticus*)
    - Red Bat (*Lasiurus borealis*)
    - Eastern Pipistrelle (*Pipistrellus subflavus*)
  - Rodentivore
    - Long-tailed weasel *(Mustela frenata*)
  - General Carnivores
    - Northern Short-tailed Shrew (*Blarina brevicauda*)
    - Star-nosed Mole (*Condylura cristata*)
    - Red Fox (*Vulpes vulpes*)
- Secondary Predators (Tertiary Consumers)
  - Mink (*Mustela vison*)
  - River Otter (*Lutra canadensis*)
- Omnivores
  - Virginia Opossum (*Didelphis virginiana*)
  - Gray Fox (*Urocyon cinereoargenteus*)
  - Striped Skunk (*Mephitis mephitis*)
  - Raccoon (*Procyon lotor*)
  - Eastern Chipmunk (*Tamias striatus*)
  - White-footed Mouse (*Peromyscus leucopus*)
  - House Mouse (*Mus musculus*)

The Friends' checklist of birds identifies 67 species that have nested in the Park; this total does not include the recently-nesting Virginia Rail (*Rallus limicola*) nor, surprisingly, common residents like Mallard (*Anas platyrhynchos*) or House Finch (*Carpodacus mexicanus*).

The checklist also indicates abundance in spring, summer, fall, and winter by the birder's (somewhat imprecise) categories of Abundant (very numerous), Common (likely to be seen or heard), Uncommon (present, may not be seen), Occasional (infrequently seen), Rare, Very Rare , and Accidental. Nevertheless, we can use these categories to identify "off season specialists:" species that do not use the Park for breeding yet depend on it for habitat the rest of the year—or at least pass through in migration. Of the birds neither present in summer nor flagged as nesters, Table 1 lists those birds that can be found in spring, fall, or winter at an abundance level of Uncommon or higher:

Species	Abundance by Season
Gadwall (*Anas strepera*)	spring: Uncommon
Blue-winged Teal (*A. discors*)	spring: Uncommon
Green-winged Teal (*A. crecca*)	spring, fall, winter: Common
Sharp-shinned Hawk (*Accipiter striatus*)	fall, winter: Uncommon
American Kestrel (*Falco sparverius*)	spring, fall: Uncommon
Sora (*Porzana carolina*)	spring: Uncommon
Common Snipe (*Gallinago gallinago*)	spring, fall: Common
Golden-crowned Kinglet (*Regulus satrapa*)	spring, fall, winter: Uncommon
Ruby-crowned Kinglet (*R. calendula*)	spring, fall: Uncommon
Swainson's Thrush (*Catharus ustulatus*)	spring: Uncommon
Hermit Thrush (*C. guttatus*)	spring, winter: Uncommon
Northern Parula (*Parula americana*)	spring, fall: Uncommon
Magnolia Warbler (*Dendroica magnolia*)	spring, fall: Uncommon
Black-throated Blue Warbler (*D. caerulescens*)	spring: Uncommon
Yellow-rumped Warbler (*D. coronata*)	spring: Abundant; fall: Common; winter: Uncommon
Palm Warbler (*D. palmarum*)	spring, fall: Uncommon
Blackpoll Warbler (*D. striata*)	spring: Common
Black-and-white Warbler (*Mniotilta varia*)	spring, fall: Uncommon
Chipping Sparrow (*Spizella passerina*)	spring: Uncommon
Fox Sparrow (*Passerella iliaca*)	spring, fall, winter: Uncommon
Swamp Sparrow (*Melospiza georgiana*)	spring, fall, winter: Common
White-throated Sparrow (*Zonotrichia albicollis*)	spring, fall: Abundant; winter: Common
Dark-eyed Junco (*Junco hyemalis*)	spring: Uncommon; fall, winter: Common
Rusty Blackbird (*Euphagus carolinus*)	spring: Common

Table 1

A wide range of families are represented here: ducks, raptors, rails, shorebirds, thrushes, wood warblers, sparrows, blackbirds, and other songbirds. This diversity bespeaks the rich and complex habitat offered within the confines of the Park.

Although an inventory of invertebrates is outside the scope of these notes, it's worth noting the importance of crayfish (family Cambaridae) as an indicator of the wetland's health and a key species in the food web.

Scalley [Scalley09] identifies the first human settlers of the region as nomadic hunter-gatherer Paleoamericans in the eleventh and tenth millennia BCE. During the period 9500-1000 BCE, the inhabitants became more sedentary, establishing camps along the rivers to harvest fish and oysters. The Woodland people (1000 BCE-1600 CE) were even more permanently established, engaging in agriculture and pottery making. The Dogues arrived in what would become Fairfax and Prince William Counties from the Maryland Piedmont in about 1300, and flourished for 400 years.

Settlers from England arrived in their Virginia colony in 1607, and made contact with the Dogues (estimated to be 280 people) shortly thereafter. At this time the Dogues' main settlement was in Mason Neck, with two more hamlets (perhaps seasonal fishing sites) on the Potomac River. By the 1650s, the Dogues had abandoned their settlements and dispersed; they cease to be an identifiable people by the turn of the century.

Meanwhile, the English continued to expand northward from their initial settlement at Jamestown. Farms on the scale of 1,000-2,000 acres (400-800 ha), growing corn and tobacco, were established on Mason Neck in the mid-17th century. A century later, George Mason IV obtained a land grant of 1,606 acres (650 ha) in the area known then as the Northern Neck: the boundaries of this grant are roughly coincident with those of the present park. The farm was divided by two of his grandsons into Dogue Run Farm (to Richard Chichester Mason, 1783-1869) and Hunting Creek Farm (to Thomson Francis Mason, 1828-1897).

Occupied by units of the 3rd Michigan Infantry in 1861-1862 during the Civil War, the property became subdivided and gradually passed out of Mason ownership. It was mostly farmed for wheat and dairy until the 20th century, when entrepreneur Henry Woodhouse reassembled most of the original Mason land grant; he hoped to build the George Washington Air Junction, an airport with plans for three runways and docking station for lighter-than-air ships. When his scheme collapsed, the land went back into dairy production, then was purchased by the federal government in 1941.

Under government ownership, the property was used, in succession, to test road asphalts, as an air defense artillery station (Virginia National Guard Battery D, 125th Gun Battalion), and to conduct classified radio communications research with two antenna fields, the larger on what is now the central wetland. The Department of the Interior declared the land surplus in 1975, and sold 1,261 acres (510 ha) to Fairfax County for $1, under the terms of the federal Legacy of Parks program [FCPA09]. With the assistance of Ducks Unlimited, FCPA added another 165 acres (67 ha) to the Park in 1992.

Management and Natural Succession

There's no doubt that the Park is woven into the fabric of a large, industrialized metropolitan area. It is crossed by a sanitary sewer line and a gas pipeline. Upstream runoff from subdivisions dumps rubbish and silt into the wetland. Traces of mid-century government uses remain on the landscape. Keep in mind that the property has been in agricultural production, heavy or light, off and on, for 700 years.

The remains of the dikes and canals used to drain this wet bottomland are easy to spot on the property today. Ponding of Barnyard Run to form the central wetland was accomplished in the late 1970s by Beavers (*Castor canadensis*), who built a dam near the present observation tower. A boardwalk across the marsh was built in 1980-81, but was undermined by continued flooding; a replacement, constructed to current accessibility standards, was completed in the mid-1990s. Meanwhile, the rodent engineers moved farther downstream. By the mid-2000s, the wetland was drying out.

Rather than allow this natural development to continue, the Park Authority took on the goal of maintaining the wetland in its present state as a freshwater marsh, in other words, arresting succession of the marsh into wet meadow, then wet woods. Stressing that it is the largest non-tidal marsh in the County, FCPA makes a strong case for restoring and preserving it.

> When you carve up an area like Northern VA into suburbia, with highways, parking lots, houses, and lawns, the few protected natural islands that remain have to some how hold all the biodiversity that the region as a whole once possessed. This means managing certain areas to retain habitats such as marshes, meadows, etc. These habitats used to exist in an ever changing mosaic of successional habitats – as one beaver marsh disappeared, another would spring up somewhere else. This no longer occurs in the suburban sea of asphalt and lawns we have created. The parks that remain have to hold those temporary successional habitats in a more permanent state in order to preserve the area's associated biodiversity, i.e. their native plant and animal communities, as well as the essential educational opportunities they provide. [FCPA08]

The result is the Wetland Restoration Project, which calls for construction of an earthen berm (180 m long, 1.5 m high, 20 m wide, with a gradual 10:1 slope) positioned just downstream of the original beaver dam, a spillway and access road, and excavation of pools to ensure variety of water depths in the wetland. Pending regulatory approval, construction is planned for summer, 2009.

Other, potentially more disruptive plans for the Park have been rejected. As Fairfax County continues to grow in population, pressures on its tangled road network mount. Various road-building plans, for instance a link between Lockheed Boulevard and South Van Dorn Street, have been set aside. A scenic drive "open only during park hours" that would bisect the Park north to south was studied [Dramby04]. At the level of foot and cycle traffic, park management have long resisted completing the link between the boardwalk and the Hike-Bike Trail, but the access road required by the new dam will effectively establish one.

Some other, smaller scale management activities by park staff are worth noting. An experimental deer exclosure was recently built near the main entrance. Bird feeders and bat roosting boxes at the visitor center are very popular with wildlife and patrons alike. As noted earlier, controlled burns, mowing, and bush hogging maintain meadow habitat. Landscaping was performed to reintroduce meanders into the upper stretches of Barnyard Run. And artificial nest box programs to support Eastern Bluebird (*Sialia sialis*), Wood Duck (*Aix sponsa*), and Hooded Merganser (*Lophodytes cucullatus*) are well established [Gorsline09], although efforts to provide boxes for Prothonotary Warbler (*Protonotaria citrea*) have not been successful.

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